Gebrauchsanleitung | Operating manual | Mode d'emploi | Instrucciones de manejo | Istruzione | Instruções de utilização | 操作手册





Impressum

BRAND GMBH + CO KG Otto-Schott-Str. 25 97877 Wertheim (Germany)

T +49 9342 808 0 F +49 9342 808 98000 info@brand.de www.brand.de Do you need more operating manuals and translations? Please refer to http://www.brand.de/om or use the following Quick Response Code:



The original operating manual is written in German. Other languages are translations of the original operating manual.

Patents:

Transferpette® S -8 / -12: US 8,011,257



U.S. Patents: www.brand.de/ip Link in Quick Response Code: www.brand.de/ip

Languages

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1 Introduction

1.1 Scope of delivery

BOECO - micropipette, with quality certificate, 2 x TipBox filled with BRAND pipette tips, shelf holder, reagent reservoir, mounting wrench, silicone grease and 1 set of shaft seals

1.2 Terms of use

- Carefully read the operating manual before using the device for the first time.
- The operating manual is part of the device and must be kept in an easily accessible place.
- Be sure to include the operating manual if you transfer possession of this device to a third party.
- You can find up-do-date versions of the operating manual on our website: www.brand.de

1.2.1 Hazard levels

The following signal words identify possible hazards:

Signal word	Meaning
DANGER	Will lead to serious injury or death.
WARNING	May lead to serious injury or death.
CAUTION	May lead to minor or moderate injuries.
NOTICE	May lead to property damage.

1.2.2 Format

Format	Meaning	Format	Meaning
1. Task	Indicates a task.	>	Indicates a condition.

Format	Meaning	Format	Meaning
	Indicates the individual steps of a task.	û	Indicates a result.

2 Safety regulations

2.1 Safety regulations

Please read carefully!

The instrument BOECO - micropipette can be used in combination with hazardous materials, work processes and equipment. However, the operating manual cannot cover all of the safety issues that may occur in doing so. It is the user's responsibility to ensure compliance with the safety and health regulations and to specify the corresponding restrictions before use.

- Every user must read and observe this operating manual before using the device.
- Follow the general hazard instructions and safety regulations, e.g.
 wear protective clothing, eye protection and protective gloves. When
 working with infectious or hazardous samples, the standard laboratory rules and precautions must be adhered to.
- 3. Follow the instructions given by the reagent manufacturer.
- Use the device only for pipetting liquids within the defined limitations and restrictions of use. Comply with the operating exclusions; see Operating exclusions, p. 45. In case of doubt, contact the manufacturer or dealer.
- Always perform work in a manner that does not endanger users or other people. Avoid splattering. Use only suitable vessels.
- 6. Avoid touching the tip opening when working with aggressive media.
- 7. Never use force.
- 8. Use only original spare parts. Do not make any technical modifications. Do not disassemble the device further than described in the operating manual!
- Always check that the device is in proper working condition before use. Always check that the device is in proper working condition before use. If device malfunctions are indicated (e.g. sluggish pistons,

leaks), stop pipetting immediately and refer to the section "Troubleshooting"; see Troubleshooting, p. 66. Contact the manufacturer, if necessary.

2.2 Purpose

This is an air displacement pipette for pipetting aqueous solutions of medium density and low to medium viscosity.

2.3 Limitations of use

This instrument is intended for pipetting samples, within the following limitations:

- Operating temperature of instrument and reagent should be between +15 °C and +40 °C (59 °F to 104 °F) (other temperatures upon request)
- · Vapor pressure up to 500 mbar
- · Viscosity: 260 mPa s

For viscous media, the speed must be adjusted if necessary.

2.4 Application restrictions

Viscous and wetting liquids may compromise volumetric accuracy. Volumetric accuracy may also be affected when pipetting liquids whose temperature deviates from the ambient temperature by more than \pm 1 °C/ \pm 1.8 °F.

2.5 Operating exclusions

The user is responsible for checking the compatibility of the instrument with the intended application. The instrument cannot be used:

for liquids that corrode polypropylene and FKM

2 Safety regulations

- for liquids that corrode polycarbonate
- for liquids that corrode polyvinylidene fluoride and silicone
- for liquids that corrode polyphenylsulphide (on 50 μ l, 100 μ l, 200 μ l and 300 μ l instruments)
- · for liquids with very high steam pressure

3 Functional and operational components



- 1 Pipetting button
- 3 Easy Calibration function
- 5 Pipetting unit
- 7 Handle
- 9 Volume-change protection

- 2 Volume-setting wheel
- 4 Finger rest
- 6 Tip cone
- 8 Volume display
- 10 Tip ejection key

Label window



The instrument can be individually labeled on the finger rest:

- a. Remove the label window on the finger rest.
- b. Mark the labeling film.
- c. Reinsert the labeling film with window.

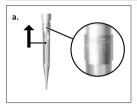
4 Pipetting

1. Inserting a tip

NOTICE

Perfect analysis results can only be achieved by using quality tips. We recommend pipette tips from For additional information, refer to the Accuracy table, p. 55.

Pipette tips are disposable products!



Insert tip vertically:
 Use the correct tips, in accordance with the volume range or color code!
 Make sure that the tips are firmly in place and leak tight.

2. Setting the volume



- a. Slide the volume-change protection upward (UNLOCK).
- Turn the volume-setting wheel to select the desired volume. In doing so, turn the adjustment wheel steadily, avoiding abrupt turning motions.
- c. Slide the volume-change protection downward (LOCK). The volume-setting wheel becomes noticeably more difficult to turn, but movement is not completely blocked!

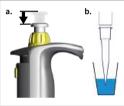
3. Align pipetting unit

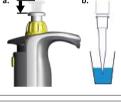
The pipetting unit can turn freely in both directions.

4. Aspirating a sample

NOTICE

The ISO 8655 standard requires that pipette tips are pre-wetted once before the actual pipetting procedure.





- a. Press the pipetting button as far as it will go.
- b. Hold the device vertically and immerse the tip in the liquid.



c. Allow the pipetting button to steadily move back to its original position.

Leave the tip immersed in the liquid for a few seconds, so that the set volume is aspirated completely. This is particularly important for viscous media and for pipettes with a large volume.

Volume range	Immersion depth	Wait time
0.5 – 100 μl	2 – 3 mm	1 s
100 – 300 μl	2 – 4 mm	1 s
> 1000 µl	3 – 6 mm	3 s

NOTICE

Do not lay the instrument down when the tip is filled; this can cause the medium to flow into the instrument and contaminate it! The instrument should always be stored in the provided shelf mount or table stand and kept in an upright position, without any tip inserted.

5. Dispensing a sample





- Place the pipette tip against the vessel wall. Hold the pipette at an angle of 30-45° to the vessel wall.
- Press the pipetting knob at a steady speed until it stops and hold it down.
 To improve accuracy, comply with the corresponding wait time for serums, highly-viscous or low-density media.
- Completely empty the tip by overstroking: Press the pipetting button as far as it will go.
- d. While doing this, wipe the pipette tip against the vessel wall.
- Remove the pipette tip from the vessel wall and allow the pipetting button to move back to its original position.

6. Ejecting a tip

NOTICE

The instrument should always be stored in the provided shelf mount or table stand and kept in an upright position, without any tip inserted.



a. Hold the pipette shaft over a suitable disposal container and press the tip eject button down as far as it will go.

5 Checking the volume

We recommend testing the instrument every 3 to 12 months depending on the level of use. However, the testing cycle can be adapted to meet individual requirements. The complete testing procedure (SOP) can be downloaded at www.brand.de.

You can download the detailed test instructions (SOP) at www.brand.de. For GLP- and ISO-compliant evaluations and documentation, we recommend the EASYCAL™ calibration software from BRAND. A demo version can be downloaded from https://shop.brand.de/.

Gravimetric volume testing of the pipette is carried out according to the following steps and complies with DIN EN ISO 8655:2022.

1. Setting the nominal volume

 Set the maximum specified instrument volume (for procedure, see Pipetting, p. 49).

2. Conditioning the pipette

 Condition the pipette before testing by aspirating and dispensing the test liquid (distilled water) with a pipette tip five times.

3. Performing the test

NOTICE

In accordance with DIN EN ISO 8655-2, a tip change is recommended after each individual measurement. An exception to this rule can be made, according to DAkkS guideline DKD-R8-1.

a. Aspirate the test liquid and pipette into the weighing vessel.

NOTICE

Each individual channel must be inspected separately.

- b. Weigh the pipetted amount with an analysis scale. (refer to the operating manual of the balance manufacturer.)
- Calculate the pipetted volume. In doing so, take into account the temperature of the test liquid.
- d. At least 10 pipetting series and weighings in 3 volume ranges (100%, 50%, 10%) are recommended. Two tips must be used for each volume range to be tested.

Calculation (for nominal volume)

x_i = weighing results

n = number of weighings

V_o = nominal volume

Z = Correction factor (e.g. 1.0029 μl/mg at 20°C, 1013 hPa)

Mean:

Mean volume:

Accuracy*:

$$\overline{x} = \frac{\sum x_i}{x_i}$$

$$\overline{V} = \overline{x} * z$$

$$A\% = \frac{\overline{V} - V_0}{V_0} * 100$$

Coefficient of variation*:

Standard deviation*:

$$CV\% = \frac{100 \text{ s}}{\overline{V}}$$

$$s = Z * \sqrt{\frac{\sum (x_i - \overline{x})^2}{n - 1}}$$

 Accuracy and coefficient of variation are calculated according to the formulas of statistical quality control.

NOTICE

Test Instructions (SOPs) are available for download from $\underline{www.brand.de}$.

6 Accuracy table

Volume range	Partial volume	A*≤±	CV* ≤ %	Sub steps	Recommended tip type
[µl]	[µl]			[µl]	[μl]
0.510	10 5 1	1.6 2 8	1.0 2 6	0.01	0.520
550	50 25 5	0.8 1.4 6	0.4 0.8 3	0.05	2200
10100	100 50 10	0.8 1.4 4	0.3 0.6 2	0.1	2200
20200	200 100 20	0.8 1.4 4	0.3 0.6 1.5	0.2	2200
30300	300 150 30	0.6 1.2 3	0.3 0.6 1.5	0.5	5300

*A = Accuracy, CV = Coefficient of Variation



Final test values based on the nominal volume (= max. volume) printed on the device and the specified partial volumes at the same temperature (20 °C/68 °F) of the device, surroundings and distilled water, in accordance with DIN EN ISO 8655.

7 Adjustment - Easy Calibration

The instrument is permanently calibrated for aqueous solutions. If it is determined that the pipette is operating inaccurately or to adjust the instrument to work with solutions of varying density and viscosity or with specially-shaped pipette tips, it can be calibrated using the Easy Calibration Technique.





- Perform a volume check and determine the actual value; see Checking the volume.
- Remove label window (1) and labeling film (2): Gently move the clamp and lift it off.
- Using a paper clip or an unused pipette tip, remove the protective film (3) (the protective film can be discarded).
- Slide the red adjustment slider back completely, lift the volume-setting wheel (decoupling) and release the adjustment slider.





e. Set the adjustment value:

Transferpette® S, adjustable: with the volume-setting wheel in the UNLOCK position, set to the previously determined actual value.

Transferpette® S, fixed-volume: set the volume by rotating in the +/- direction.

A volume check is recommended after every adjustment.

f. Slide the adjustment slider completely back again, push the volume-setting wheel downward and release the adjustment slider. Re-attach the labeling film and reassemble the label window.

NOTICE

The change to factory settings is indicated by the red adjustment slider now visible in the label window

8 Disinfection/autoclaving

8.1 Autoclaving

The Pipette is completely autoclavable at 121 °C (250 °F), 2 bar and a holding time of at least 15 minutes, in accordance with DIN EN 285.

- a. Eject the pipette tip.
- b. Autoclave the complete pipette without any further disassembling.
- c. Allow the pipette to completely cool and dry.

NOTICE

The effectiveness of autoclaving must be verified by the user. Maximum safety is achieved through vacuum sterilization. We recommend the use of sterilization bags.

NOTICE

Prior to autoclaving, the volume-setting wheel must be set on an available numbered value (e.g., 11.25 or 11.26, but not between), with the volume-change protection set to fully unlocked (UNLOCK).

If the pipette is autoclaved frequently, the piston and seal should be greased with the supplied silicone grease in order to ensure proper movement. After autoclaving, tighten the connection between the hand grip and the pipette shaft if necessary.

8.2 UV sterilization

The device is resistant to normal exposure to a UV disinfection lamp. The effects of the UV exposure may cause some color change.

9 Maintenance

9.1 Separate the pipetting unit from the handle



- a. Eject the pipette tips.
- To separate, pull the pipetting unit downward as far as possible. Only then, turn it clockwise. After one revolution, the unit no longer needs to be pulled downward while turning.

NOTICE

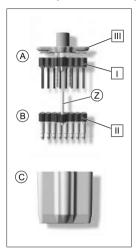
- When assembling, the pipetting unit must be screwed counter-clockwise onto the handle so that it clicks into place.
- > When assembling, do not pull the pipetting unit downwards.
- > Improper handling can lead to damage.

9.2 Disassembly/cleaning

The three main components of the pipetting unit can be easily separated and disassembled for maintenance, cleaning or replacing parts.

Changing the O-rings on the individual shafts is described in detail in the instructions included with the replacement part.

Main components of the pipetting unit



Α

Piston unit with piston support bar [1] and inserted pistons, which can be individually unscrewed for cleaning or replacement.

В

Shaft unit with shaft support bar [II] and attached central guide axis (Z) as well as the shafts and seals, which can be individually unscrewed for cleaning and replacement.

C

Pipette housing, which is connected to the pipette housing cover [III] of the piston unit using two turn-lock closures.

Maintenance

In order to ensure proper functioning, the Transferpette® S -8/-12 should be serviced at regular intervals and cleaned as necessary.

What must be checked?

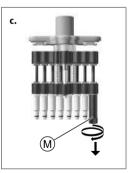
- a. Check the pipette shafts, pistons and seals for damage and contamination.
- b. Check the device for leaks. We recommend using BRAND's leak detector, the BRAND PLT unit. As an alternative to this, aspirate a sample and hold the device vertically for approx. 10 s. If drops form on the pipette tips, refer to "Troubleshooting" Troubleshooting, p. 66.

Cleaning instructions

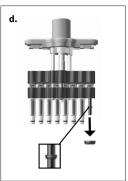
- Clean individual shafts and pistons (only these parts) with soap solution or isopropanol. Then rinse with distilled water.
- b. Allow the parts to completely dry and cool. Liquid residues in the shafts result in deviations in accuracy.
- c. Re-grease pistons with a very thin coat of the grease supplied. For the central guide axis (Z), use only the prescribed fluorine static grease.

Removing shafts and seals for cleaning or replacement





- a. Separate the pipetting unit from the hand grip.
- Rotate both closures of the pipette housing cover by 90° (e.g. using a coin) and pull off the pipette housing.
- c. Place the installation tool (M) onto a single shaft and unscrew the shaft.



d. Push the piston unit all the way down. After removing the shaft, the seal is located either in the shaft or on the piston. Remove and inspect the seal and clean or change as necessary. If required, re-grease the piston with the supplied silicone grease. (To clean the Transferpette® S -8/-12 30 - 300 μl, remove the additional pressure ring from the piston.)



 Slide the seal onto the piston with the flat side upwards. (On the Transferpette® S -8/-12 30 - 300 μl, first re-install the additional pressure ring!) Tighten the cleaned or new shaft using the installation tool.



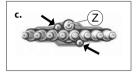
f. Reassemble the pipetting unit. Check the instrument for leaks, see Maintenance, p. 59.

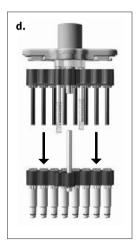
NOTICE

The pipetting unit must be screwed onto the handle in a counter-clockwise direction until it clicks into place. Do not pull the pipetting unit downwards!

Removing pistons for cleaning or replacement







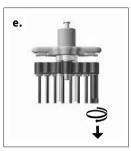
- a. Separate the pipetting unit from the hand grip.
- Rotate both closures of the pipette housing cover by 90° (e.g. using a coin) and pull off the pipette housing.
- c. Remove both outer Phillips-head screws on the shaft unit.

NOTICE

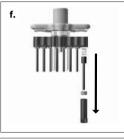
The central guide axis (Z) must not be removed!

 d. Pull apart and separate the piston and shaft unit. Remove stroke springs.

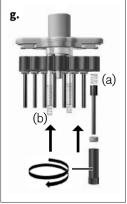
9 Maintenance



e. Place the installation tool onto the piston nut and unscrew it.



f. Remove the piston nut and pull off the piston with piston spring.



g. Insert piston spring (a) and cleaned or new piston. Re-tighten the piston nut using the installation tool. Insert stroke springs (b).



h. Reassemble the pipetting unit. Check the instrument for leaks, see Maintenance, p. 59.

NOTICE

The pipetting unit must be screwed onto the handle in a counter-clockwise direction until it clicks into place. Do not pull the pipetting unit downwards!

10 Troubleshooting

Fault	Possible causes	Corrective action
Tip dripping (device leaking)	Unsuitable tip	Only use high-quality tips
	Tip not seated tightly	Firmly press tip on
The instrument does not as-	Seal contaminated	Clean seal
pirate or aspirates too little; the dispensed volume is too	Seal or cone is damaged	Replace seal or shaft
low	Piston is contaminated or damaged	Clean or replace piston
Aspiration is very slow	Shaft is clogged	Clean shaft
Dispensed volume too large	Pipetting button pressed too far (to the over-stroke point) before aspirating	Ensure proper handling.
Piston sluggish	Piston is contaminated or not greased	Clean piston and apply grease

11 Product markings

Symbol or number	Meaning
	Read the user manual.
XXZXXXXX	Serial number
DE-M 21	The instrument is marked in accordance with the German Measurement and Calibration Act as well as the Measurement and Calibration Regulation. Character sequence DE-M (DE for Germany), framed by a rectangle, as well as the two last digits of the year the marking was affixed.
121 °C	Autoclavable up to the temperature shown
Data matrix	The data matrix refers to the BRAND MyProduct website.
www.brand.de/ip	Hyperlink to BRAND patent site

12 Order Information

12.1 Ordering Information/Accessories

Transferpette® S-8

Volume	Description	Order No.
0.5–10 μl	M8-10	705900
5–50 μl	M8-50	705906
10–100 μl	M8-100	705908
20–200 μl	M8-200	705910
30–300 μl	M8-300	705912

Transferpette® S -12

Volume	Description	Order No.
0.5–10 μl	M12-10	<u>705920</u>
5–50 μl	M12-50	705926
10-100 μl	M12-100	705928
20-200 μl	M12-200	705930
30-300 μl	M12-300	705932

Table stand



Description	Order No.
Table stand for 6 Transferpette® S	704807
or 6 Transferpette® S -8/-12	

Wall mount



Description	Order No.
Wall mount for	704812
1 Transferpette® S	
or	
1 Transferpette® S -8/-12	

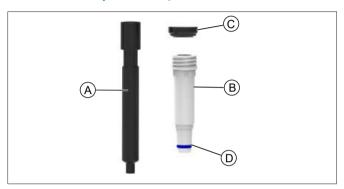
Shelf/rack mount



Description	Order No.
Shelf mount for	<u>704811</u>
1 Transferpette® S	
or	
1 Transferpette® S -8/-12	

12.2 Spares

12.2.1 Transferpette® S -8/-12



Volume ¹	Piston	Shaft ²	Seal	O-ring
	A	B ³	С	D
0.5 - 10 μl	705659	705677	703340	703380
5-50 μl	<u>705666</u>	<u>705634</u>	703343	705618
10–100 μl	705662	<u>705635</u>	703344	705618
20-200 μl	705663	<u>705636</u>	<u>703345</u>	705618
30-300 μl	705664	<u>705638</u>	<u>703346</u>	705618

¹ The appearance and dimensions of the spare parts correspond to the respective nominal volume.

²Until March 23, other order no.; see shop.brand.de

 $^{^3}$ including seal, O-ring, and installation tool. BOECO - micropipette 30–300 $\,\mu l$ also with pressure ring.

12.3 Additional accessories

Description	Order No.		
Label window, PU 1 pc.	704750		
Labeling film, PU 5 pcs.	<u>704751</u>		
Silicone grease	<u>703677</u>		
Fluorine static grease	<u>703678</u>		
Reagent reservoir, PP. Content 60 ml. Suitable for autoclaving (121 °C).			
With cover. PU 10 pcs.	703459		
Sterile, without cover. Packaged individually. PU 100 pcs.	703411		
sterile, without cover. 5 pcs./bag. PU 200 pcs.	703409		
PLT unit (pipette leak detector)	703970		

13 Repairs

13.1 Sending for repair

NOTICE

Transporting of hazardous materials without a permit is a violation of federal law.

Clean the instrument thoroughly and decontaminate!

- When returning products, please enclose a general description of the type of malfunction and the media used. If information regarding media used is missing, the instrument cannot be repaired.
- · Only send the device without a battery installed.
- · Shipment is at the risk and the cost of the sender.

Outside USA and Canada

Complete the "Declaration on Absence of Health Hazards" and send the instrument to the manufacturer or supplier. Ask your supplier or manufacturer for the form. The form can also be downloaded from www.brand.de

Outside USA and Canada

Please clarify the requirements for the return delivery with BrandTech Scientific, Inc **before** sending the instrument in for service.

Return only cleaned and decontaminated instruments to the address provided with the Return Authorization Number. Place the Return Authorization number so that it is clearly visible on the outside of the package.

Contact addresses

Germany: USA and Canada:

BRAND GMBH + CO KG Otto-Schott-Straße 25 97877 Wertheim (Germany) T +49 9342 808 0 F +49 9342 808 98000 info@brand.de

India:

303, 3rd Floor, 'C' Wing, Delphi Hiranandani Business Park, Powai Mumbai-400 076 (India) T+91 22 42957790 F+91 22 42957791 info@brand.co.in

www.brand.co.in

BRAND Scientific Equipment Pvt. Ltd.

BrandTech® Scientific, Inc. 11 Bokum Road Essex, CT 06426-1506 (USA) T+1-860-767 2562 F+1-860-767 2563 info@brandtech.com

China:

BRAND (Shanghai) Trading Co., Ltd. Rm 201-202, North Tower, No. 199 Kaibin Rd, Xuhui District, Shanghai Shanghai 200030 (P.R. China) T+86 21 6422 2318

F +86 21 6422 2318 F +86 21 6422 2268 info@brand.com.cn www.brand.cn.com

14 Calibration service

The ISO 9001 and GLP guidelines require regular inspection of your volume measuring devices. We recommend performing a volume check every 3 to 12 months. The cycle is dependent on the individual requirements of the device. Checks should be performed more frequently, in case of high frequency of use or the use of aggressive media.

The complete SOP for testing can be downloaded from www.brand.de or www.brandtech.com.

BRAND also offers you the option of having your devices calibrated through our factory calibration service or through our accredited calibration laboratory. Just send us the devices to be calibrated, indicating the type of calibration you would like. You will get your devices back in a few days. A detailed calibration report (factory calibration) or an accredited calibration certificate in accordance with DIN EN ISO/IEC 17025 is enclosed with each device. More information can be obtained from your retailer or directly from BRAND. The order document is available for download at www.brand.de (Service & Support).

For customers outside Germany

If you would like to use our calibration service, please contact one of our service partners in your region. Our service partners can forward your devices to BRAND for factory calibration, if required.

15 Warranty

We shall not be liable for the consequences of improper handling, use, servicing, operating or unauthorized repairs of the device or for the consequences of normal wear and tear, especially of wearing parts such as pistons, seals, valves and the breakage of glass. The same applies for failure to follow the instructions of the operating manual. We are not liable for damage resulting from disassembly beyond that described in the operating manual or if non-original spare parts or components have been installed

USA and Canada:

Find more warranty information on www.brandtech.com.

16 Disposal

Before disposal, observe the relevant national disposal regulations, and ensure that the product is disposed of properly.